

5G Varnost

5G 112 mobile apps – Is it real?

Urban Sedlar, 5G Safety Workshop
Bled, 14.12.2018

University of Ljubljana

- We are comprehensive, traditional, research oriented University
 - established in 1919
- Among 500 best universities on:
 - Shanghai list
 - Webometrics list
 - Times lists
- 26 members (faculties – schools – colleges)
 - 43.000 students
 - 1.800 foreign students
 - 1.500 exchange students
 - 9.700 graduates
 - 5.600 employees
 - 439 EU projects
 - 123 other international projects
 - an annual budget of app. 324 M EUR
 - the largest research institution in Slovenia



University of *Ljubljana*



UL Faculty of Electrical Engineering



University of Ljubljana
Faculty of Electrical Engineering

the faculty education research news

TIMETABLE

news



06 November

UNIVERSITY OF LJUBLJANA CAREER CENTRES - INVITATION FOR INTERNATIONAL STUDENTS

Dear international students, University of Ljubljana Career Centres are doing our best to support your career planning, as well as offer you opportunities for getting to know Slovenia and Slovenians. In November we are therefore organising interesting workshops that will enable you to carry out a thorough self-assessment, prepare for entering the global labour...



06 October

INFORMATION FOR FOREIGN STUDENTS IN ONE PLACE

Please find all the necessary information about enrolment on this links.

links

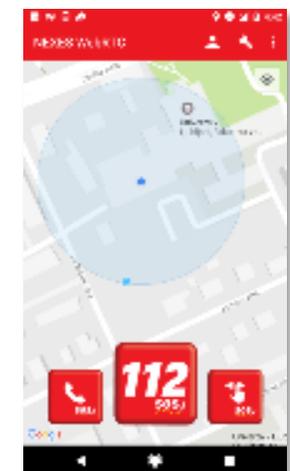
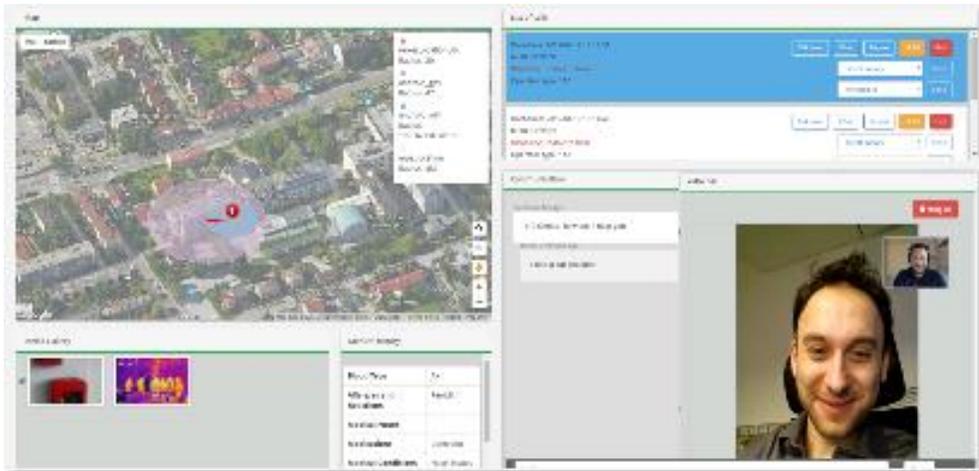
[studis](#)
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- 2.000 students
- 300+ academic & research staff
- 50%+ of budget acquired on market
- 3 licensed startups in last 2 years

Some PPDR and 112 references

- 2008: WAP₁₁₂ for the Administration for Civil Protection and Disaster Relief
- 2013: GEN6 ("Governments ENabled with IPv6"), <http://www.gen6-project.eu/>
- 2013: AED database Slovenia
- 2015: ARCADIA, <http://arcadia-framework.eu/>
- 2015: NEXES ("NEXt generation Emergency Services"), <http://nexes.eu/>
- 2018: 5GSAFETY, <https://5gvarnost.iskratel.com/en/>



Some perspective

Not too long ago...

- This was our equipment
 - and finding the caller was quite accurate
 - (just find where this wire goes)
- And we had to dial 4 separate numbers
 - Police – 92, fire brigade – 93, ambulance – 94, civil protection – 985



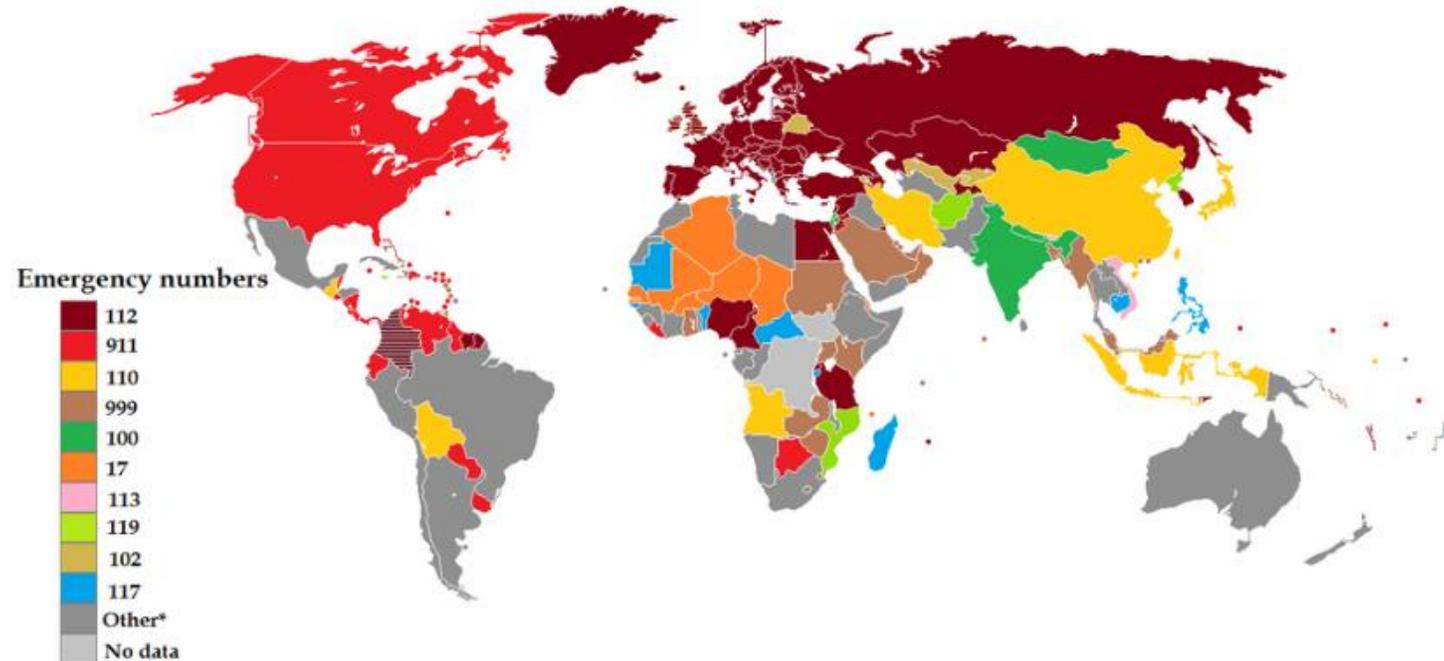
Today, we live in a different world

- We have powerful computers in our pockets
 - Phone is just an app
 - And there's an app for everything
- We're mobile
 - Positioning has suddenly become inaccurate
 - 500 meter radius is often quite good
- We're roaming
 - Changing countries, operators



And we have 112

- Promoted by EENA – European Emergency Number Association
 - Hasn't taken over the world yet...



129(Albania), 101(Argentina,Togo), 000(Australia,PapuaN.G.) 211(Barbados), 190(Brazil), 993(Brunei), 132(CapeVerde), 133(Chile), 123 (Colombia,Lesotho), 6654804(R.Congo), 106(Cuba), 199(Cyprus,Honduras), 114(EquatorialGuinea), 127799(Eritrea), 91(Ethiopia), 917(Fiji), 1730 (Gabon), 1717(Guinea), 114(Haiti), 122(Iraq), 111(IvoryCoast,NewZealand), 992(Kiribati), 191(Laos,Thailand,Yemen), 1515(Libya), 997(Malawi), 066(Mexico), 19(Morocco), 10111(Namibia,SouthAfrica), 155(NorthCyprus), 15(Pakistan), 105(Peru), 222222(SãoTomé&Príncipe), 019(SierraLeone), 888(Somalia), 118(SriLanka), 922(Tonga), 197(Tunisia), 02(Turkmenistan), 150(WesternSahara)

Why 112 mobile apps?

- Location, location, location
 - Your phone likely has a combined GPS+GLONASS receiver
 - Plus Wi-Fi positioning that works indoors
- You can also share predefined datasets and save a lot of time
 - Personal information, disabilities, spoken language, next of kin, medical info,...
- Finally, there's multimedia
 - Sharing pictures, videos
 - Video call (deaf people)
 - Real-time text messaging
 - Interactive content

State of 112 mobile apps

- In 2015 EENA published a mobile apps strategy
 - State of the apps in 2015:
- 8 years after first smartphone: still very limited

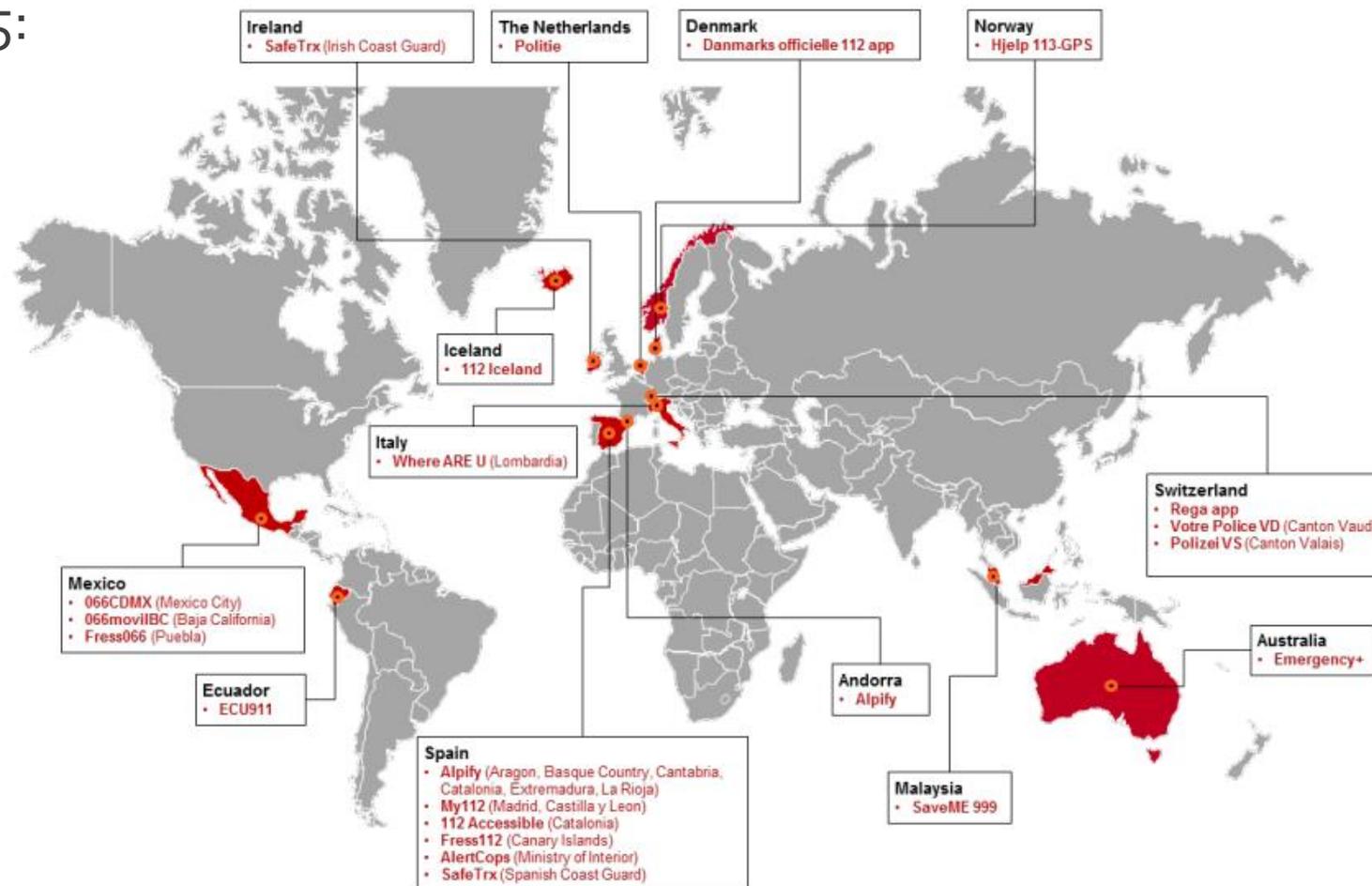
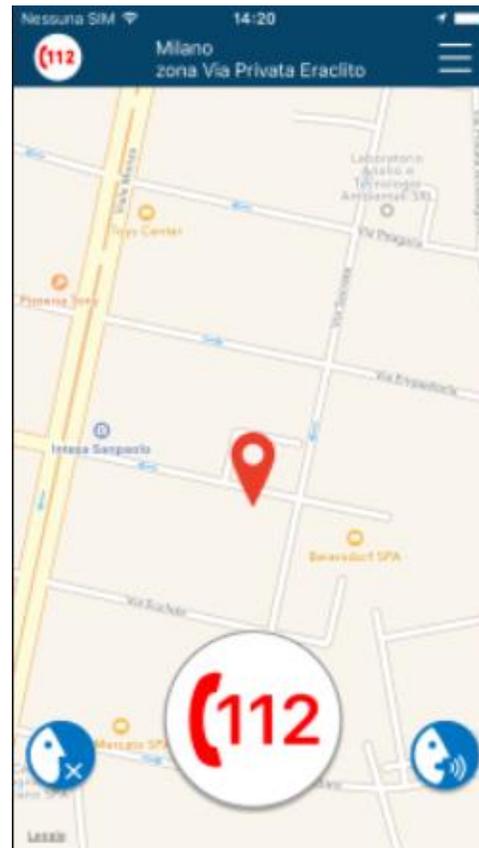
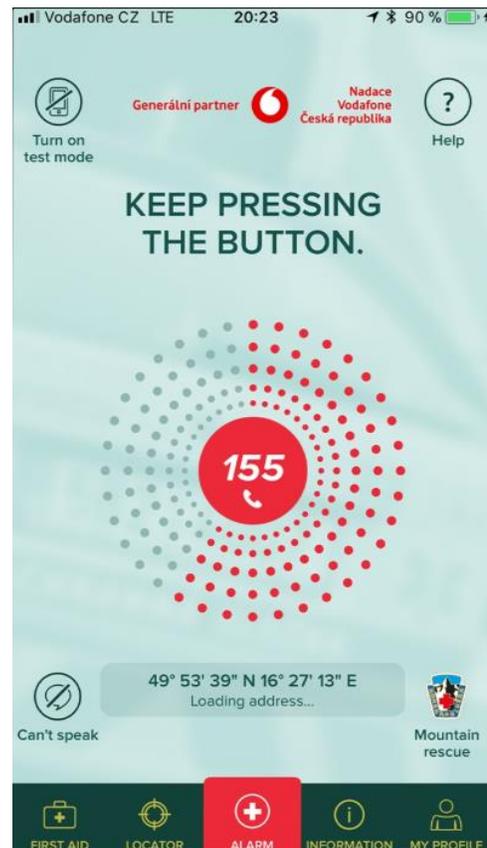


Figure 1: World map of Apps recognised by PSAPs / EROs (sample)

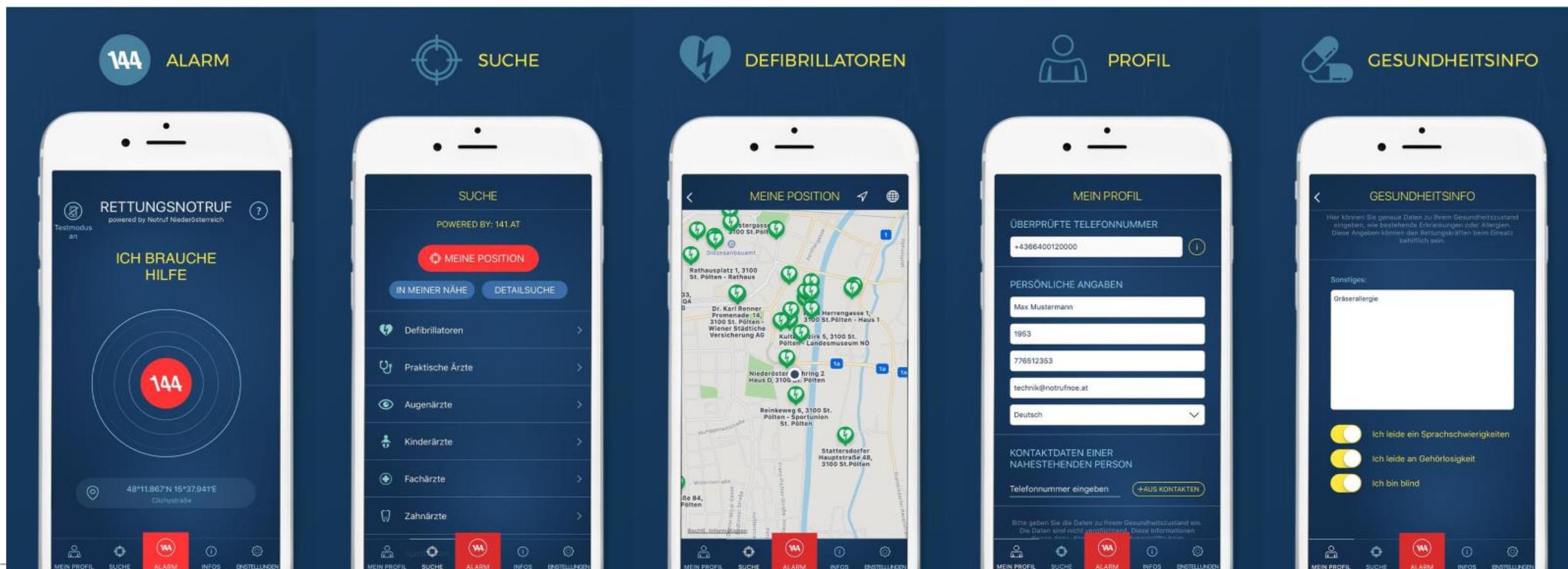
State of 112 mobile apps

- Several EU countries already have a national 112 app
- Finland, Czech Republic, Italy, Spain, Austria, and more



Some basic, some very advanced

- Example of the Czech app Záchranka
- deployed in multiple countries

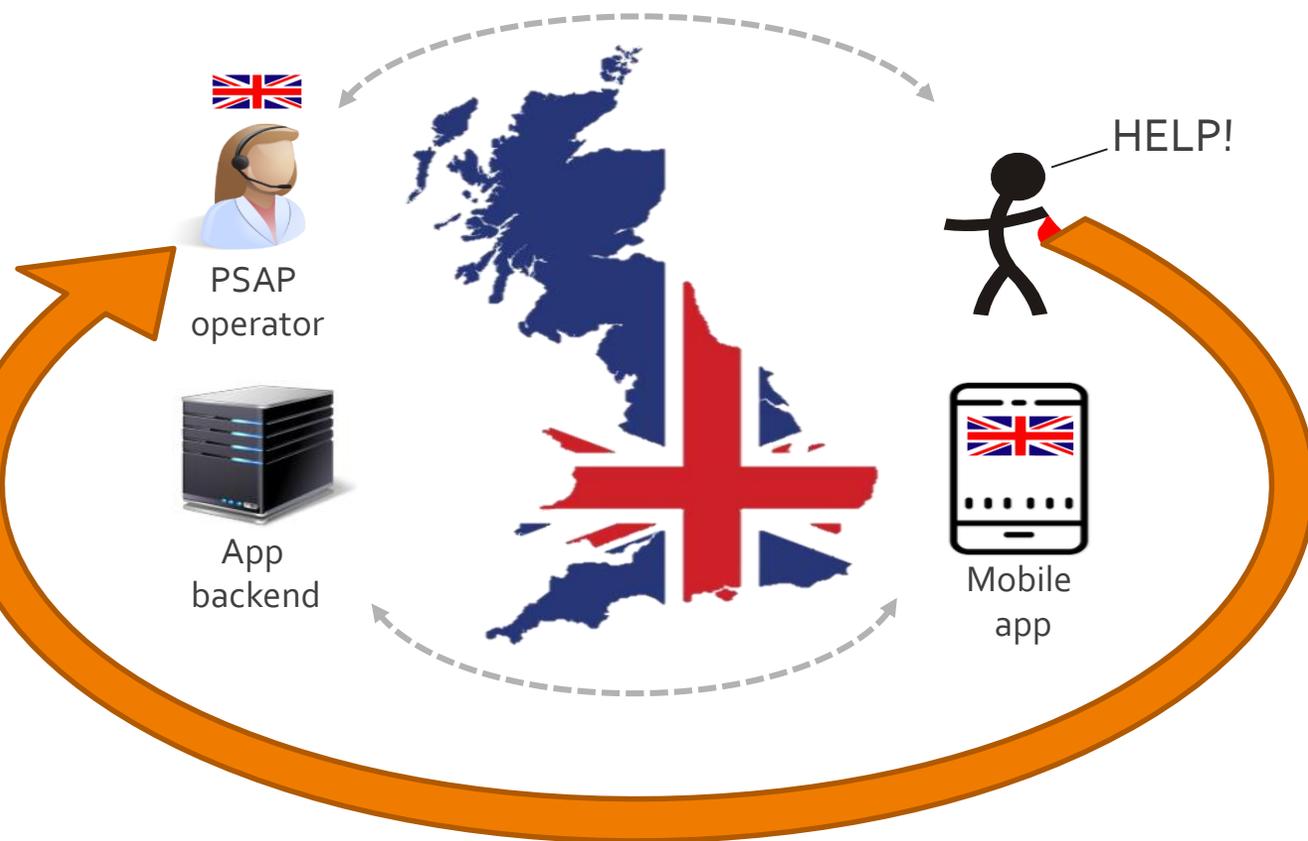


Connecting apps: the PEMEA Architecture

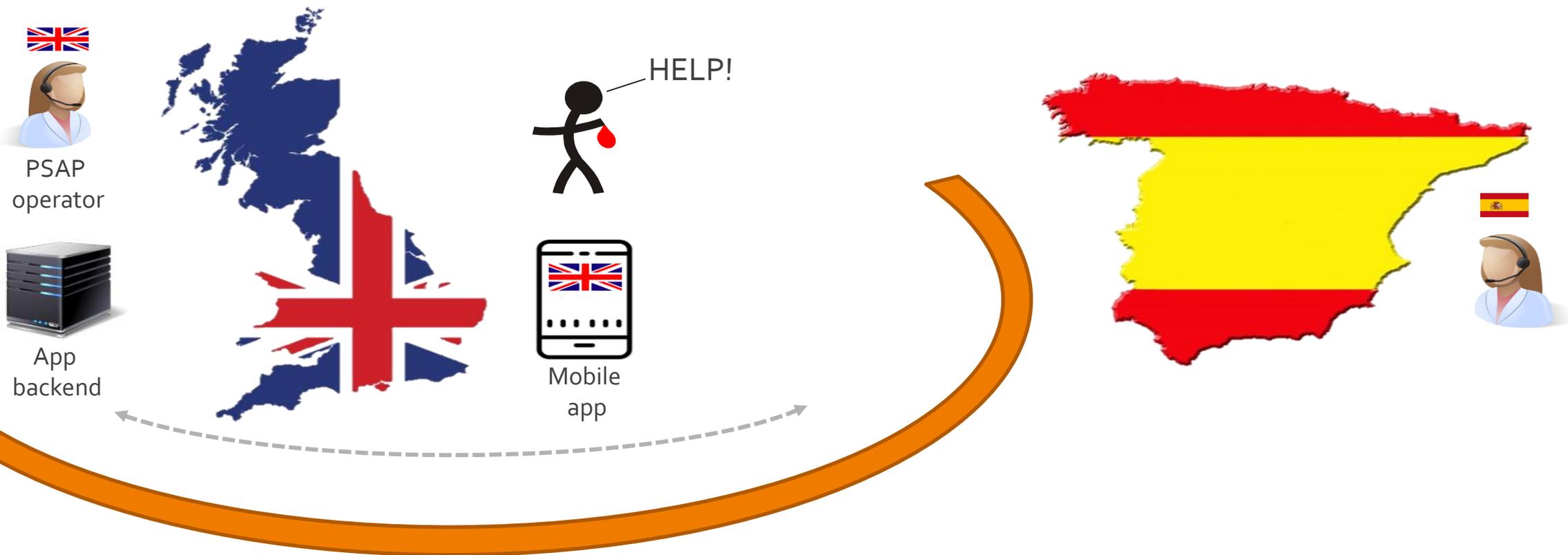
- A pan-European standard for connecting users with the PSAP
 - Allows upgrading the connection to media communication, etc.
 - Supports roaming and geo-based message routing
- Now also standardized by ETSI (ETSI TS 103 478)



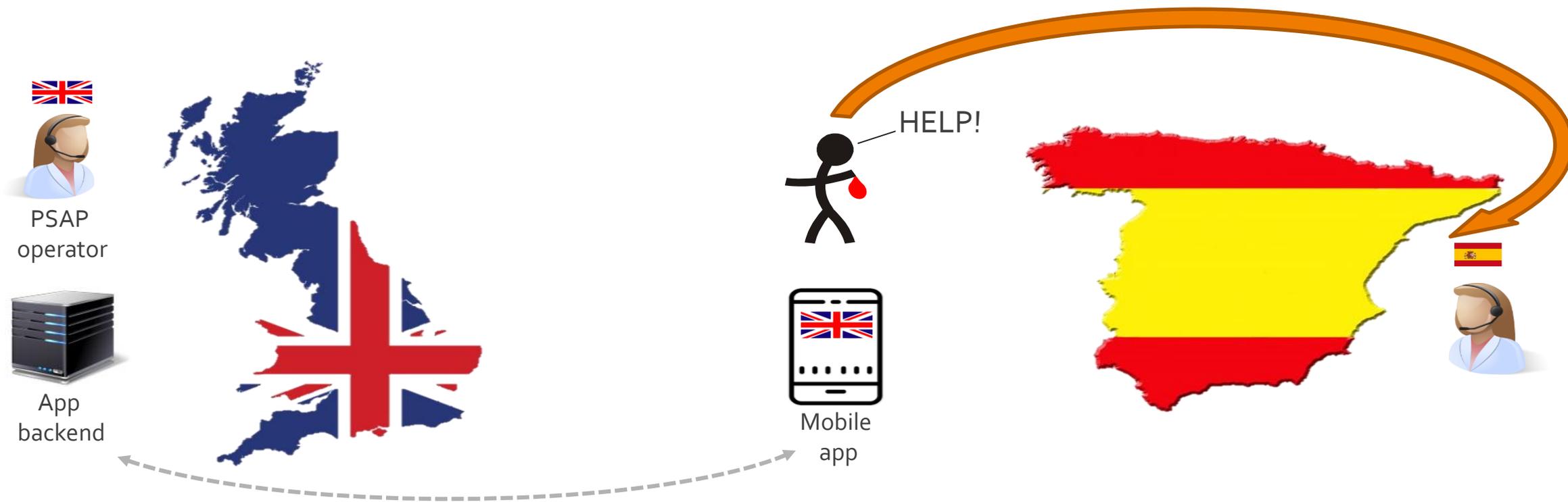
What's so special about roaming?



What's so special about roaming?

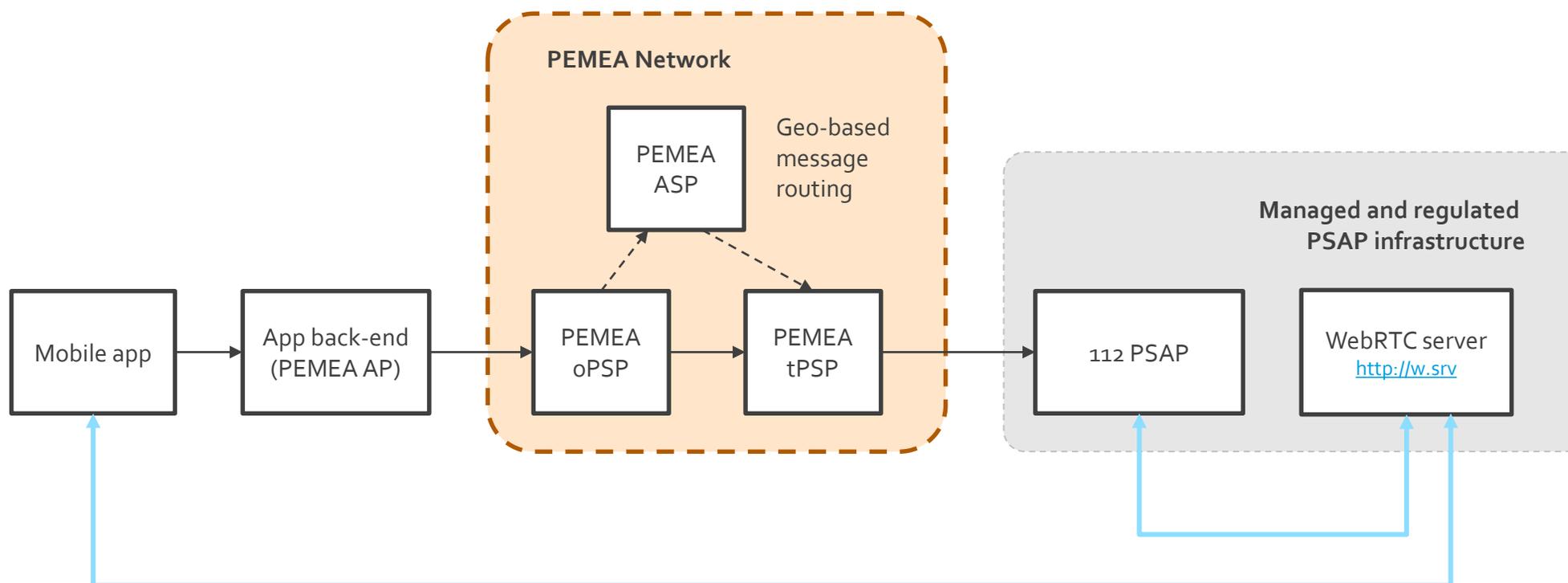


What's so special about roaming?

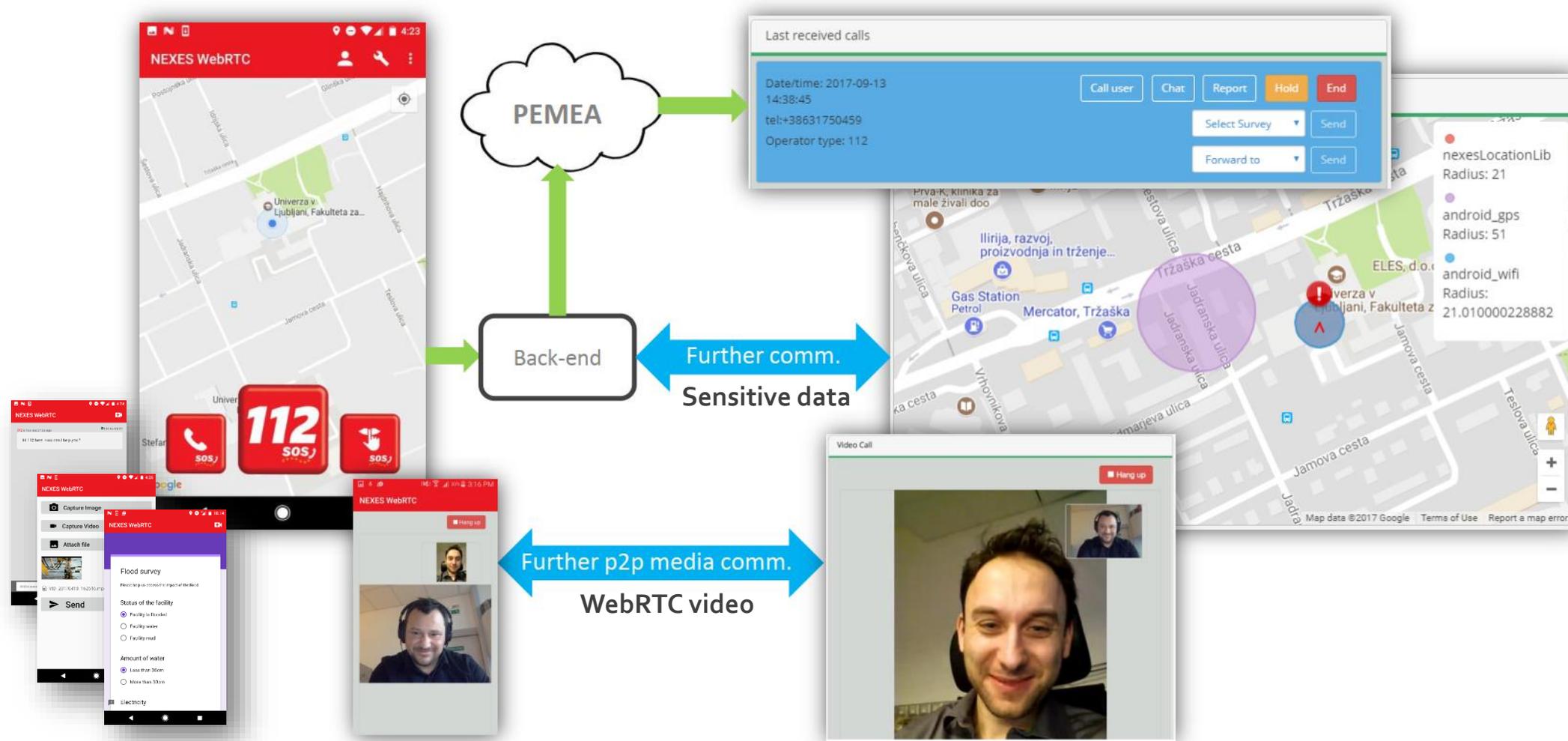


Connecting apps: the PEMEA Architecture

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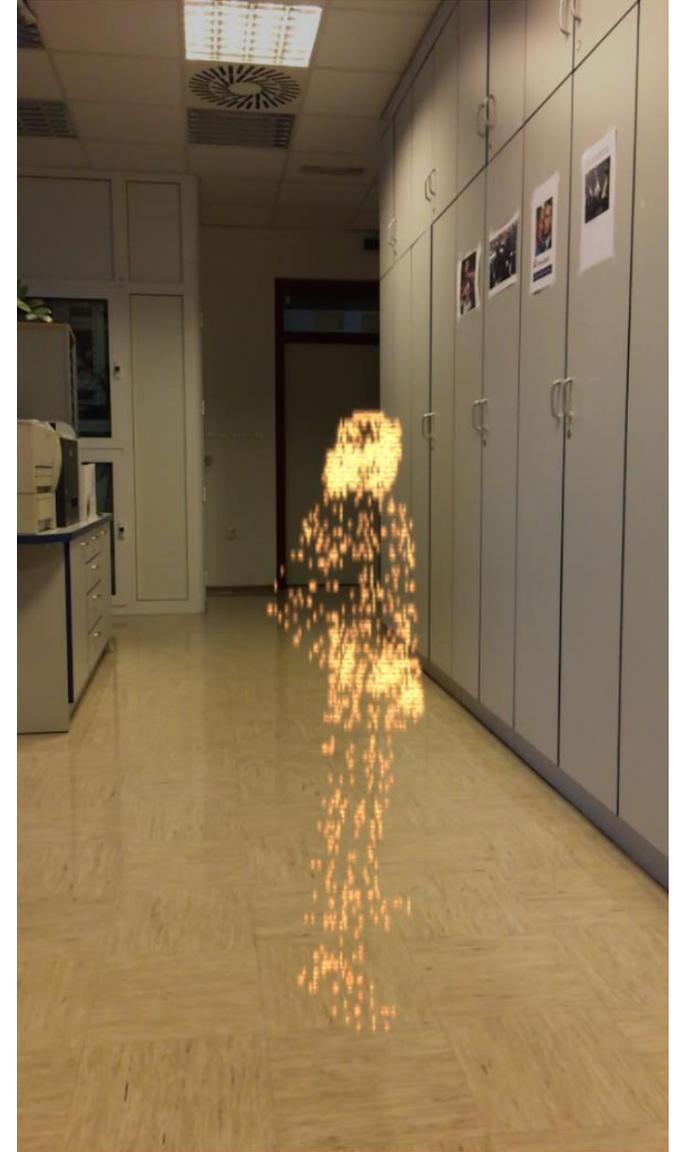
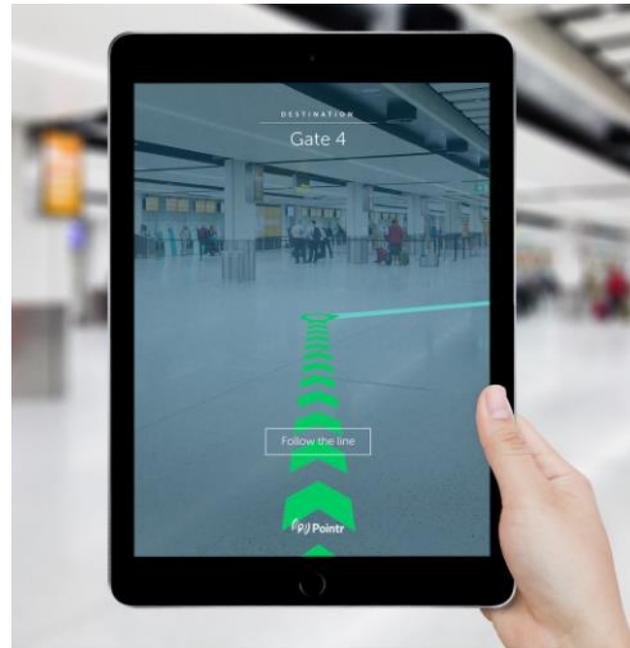
Example: UL pilot app & PEMEA infrastructure*



* UL has also contributed to the PEMEA specification

Future: PEMEA extensions

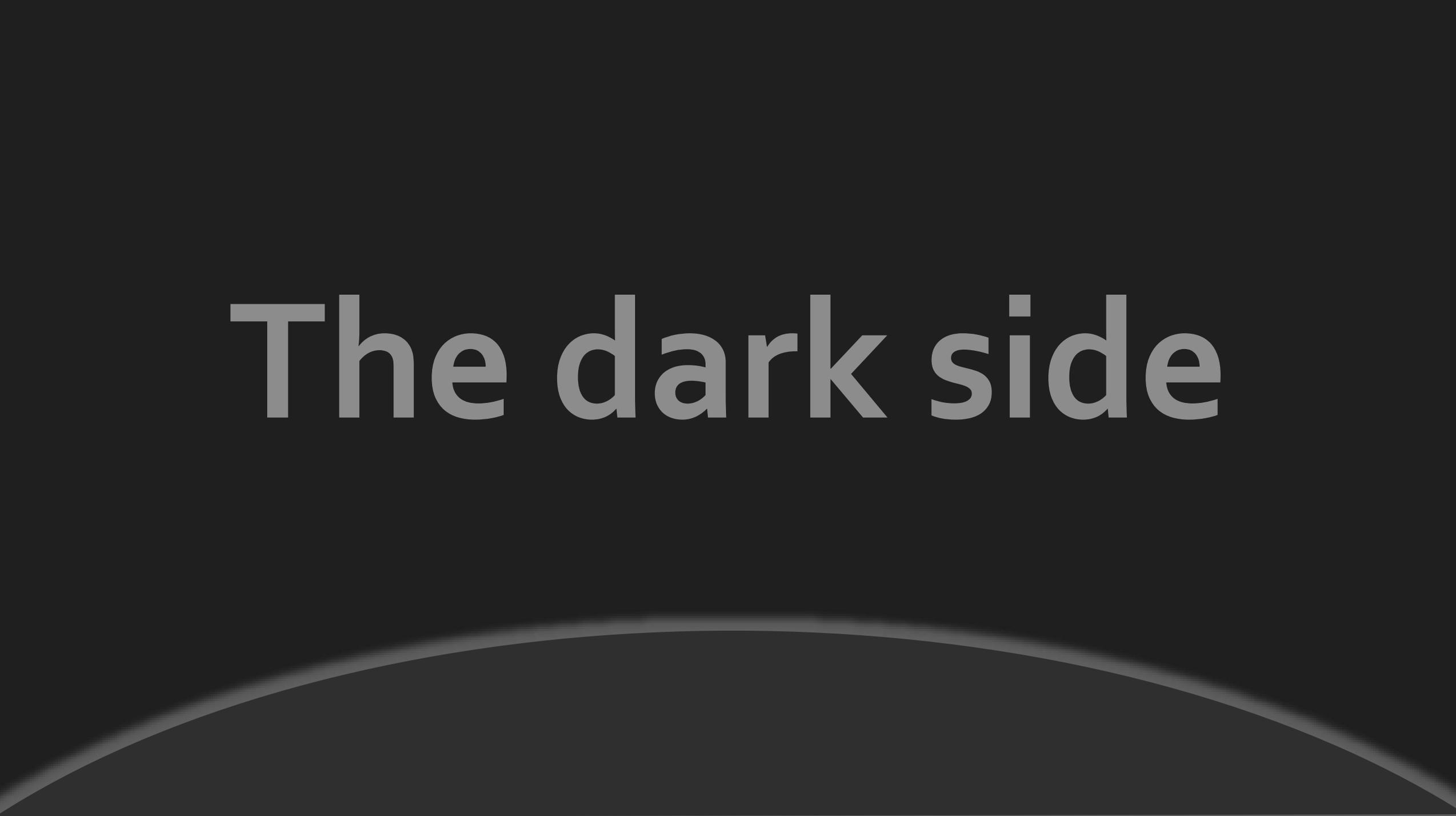
- A lot in the standardization pipeline:
 - Text chat, video call, medical data exchange
 - Location updating
- Research: we're working on WebVR & WebXR
 - Browser-based VR and AR experience



Future: leveraging 5G

- Increased QoS in critical situations and mass events
- Free-of-charge data calls (similar to 112)
- Ensuring low latency communication
 - needed for advanced video and AR/VR functionalities
- More accurate network-based positioning
 - Crucial for finding users in buildings and urban canyons
 - A prerequisite for AR apps based that rely on indoor positioning

The dark side



Mindshare & awareness

- We've had 112 number in Slovenia for 21 years
 - Second country to adopt 112 – on 1.12.1997
- Intensive marketing throughout that period
 - European 112 day (11.2)
 - Ads, billboards, SMS messages when roaming, etc.

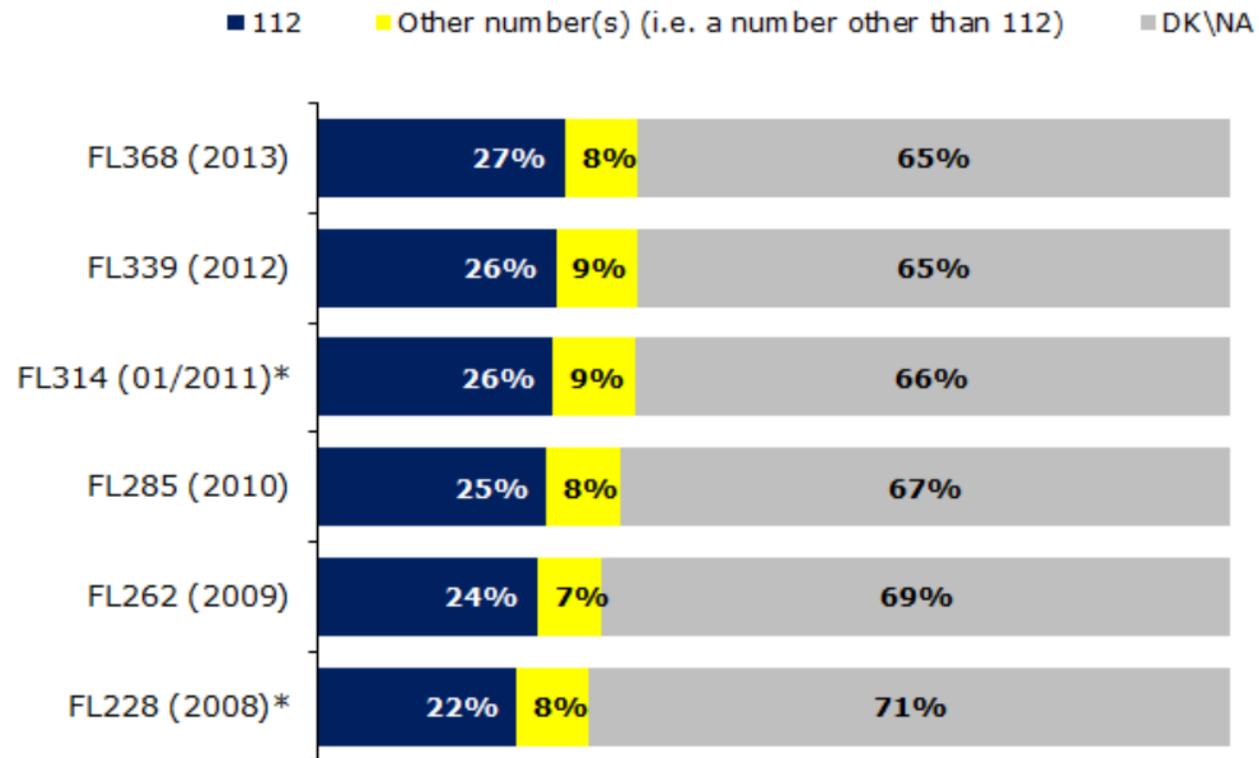
– Still:

DIGIBYTE | 11 February 2016

Europe's emergency number 112 known by half of Europeans : EC acts to inform young people

112 awareness polls (2013)

Knowledge of 112 as the EU-wide emergency number



Q3. Can you tell me what telephone number enables you to call emergency services anywhere in the European Union?
Base: all respondents, % EU27

Telephone number(s) EU citizens would call in the event of an emergency in their own country
-% by country

	112	National number(s)	Other number(s)	DK\NA
GROUP 2: Countries where 112 operates alongside other emergency numbers				
Average	44%	58%	17%	5%
EE	89%	19%	15%	3%
SI	84%	65%	7%	2%
BG	83%	10%	9%	4%
LU	83%	56%	11%	3%
SK	80%	33%	14%	3%
LT	79%	15%	8%	7%
DE	75%	45%	22%	4%
ES	73%	15%	23%	8%
LV	71%	37%	14%	6%
PL	68%	45%	9%	2%
CZ	58%	70%	5%	2%
HR	52%	33%	10%	16%
BE	49%	51%	20%	5%
IT	35%	55%	32%	6%
HU	35%	65%	15%	9%
CY	25%	31%	15%	35%
IE	19%	81%	16%	2%
FR	16%	84%	11%	4%
AT	16%	83%	11%	4%
UK	3%	94%	9%	2%
EL	2%	84%	7%	10%

Raising awareness in practice



Raising awareness in practice

Potrebujete pomoč?

Klic na številko 112 lahko reši življenje.



112 SOS

Ob klicu na številko 112 ostanite mirni in povejte:

- **kdo** kliče,
- **kaj** se je zgodilo,
- **kje** se je zgodilo,
- **kdaj** se je zgodilo,
- **koliko** je ponesrečencev,
- **kakšne** so poškodbe,
- **kakšne** so okoliščine na kraju nesreče,
- **kakšna** pomoč je potrebna.

Več informacij: www.sos112.si

112 SOS

Številka za klic v sili

112 je številka za klic v sili, na katero lahko pokličete brezplačno, če potrebujete pomoč gasilcev, nujno medicinsko pomoč, druge reševalne službe ali policijo.

Ob klicu na številko 112 ostanite mirni in povejte:

- kdo kliče,
- kaj se je zgodilo,
- kje se je zgodilo,
- kdaj se je zgodilo,
- koliko je ponesrečencev,
- kakšne so poškodbe,
- kakšne so okoliščine na kraju nesreče,
- kakšna pomoč je potrebna.

Več informacij: www.sos112.si



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA UNANOST
INRAVNA VARNOST, VEŠČINSKI
INJENIRSKI INŠPEKTORAT
SLOVENIJE

112  V primeru požara pokličite številko 112 in povejte:

GASILCI REŠEVALCI

- kdo kliče
- kje gori
- kaj gori
- kakšen je obseg požara

112  **GASILCI REŠEVALCI** **112**  **GASILCI REŠEVALCI**

This is still ongoing

- This picture was taken last week
- 112 promoted on the side and on the back of municipal transport



The apps are yet to have this problem

- In case of emergency, many people don't even remember 112
 - Let alone that there's an app for that.
- Many EU apps report low download numbers
 - And ***very*** low percentage of emergency calls
- !
- If you don't use an app, your OS might even *offload* it
 - This means it has to be re-downloaded when you need it

Offload Unused Apps

Automatically remove unused apps, but keep all documents and data. Reinstalling the app will reinstate your data if the app is still available in the App Store.

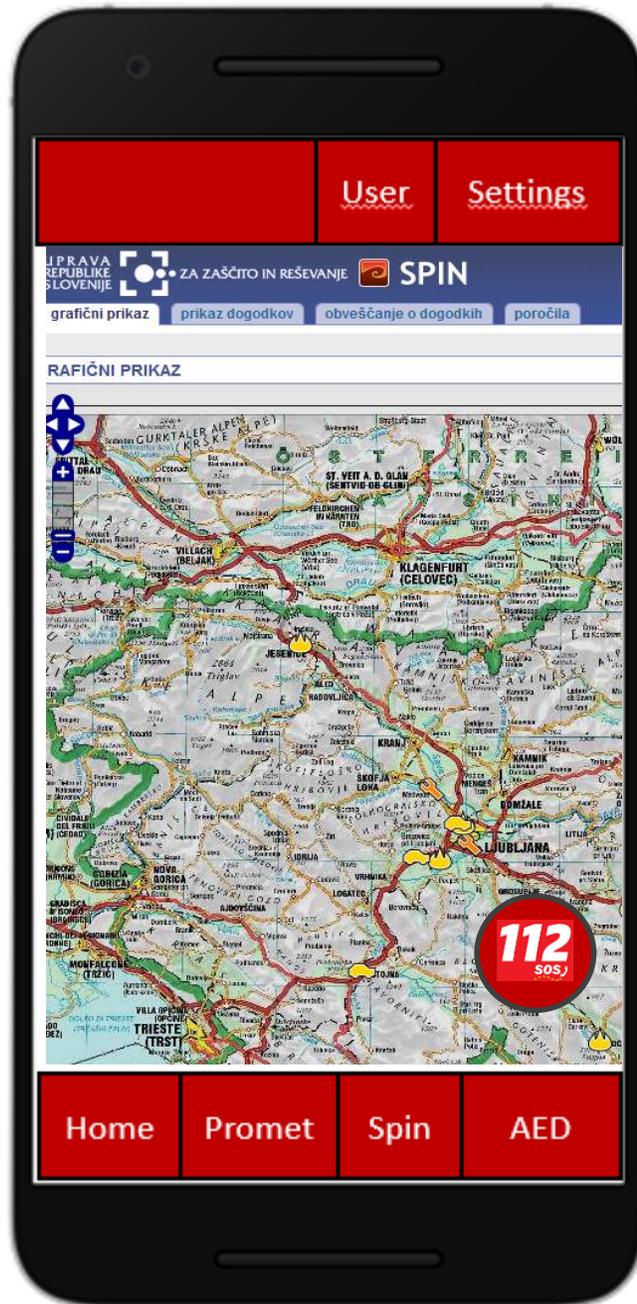
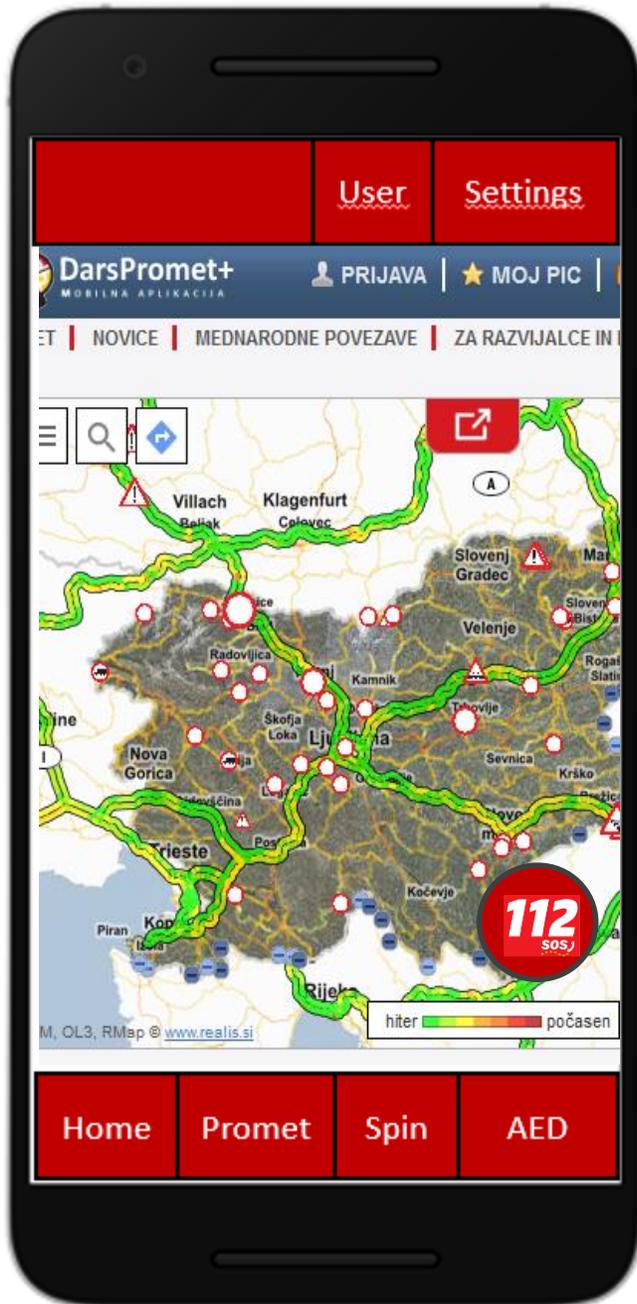
If you don't use it, you won't find it

– Can you find Twitter?



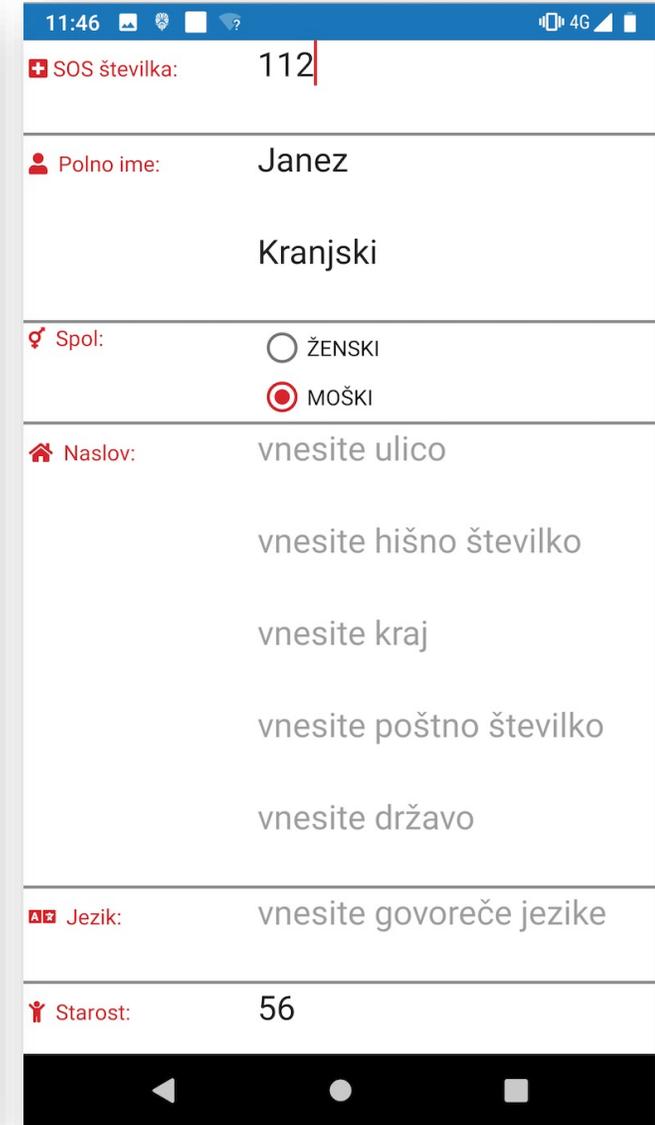
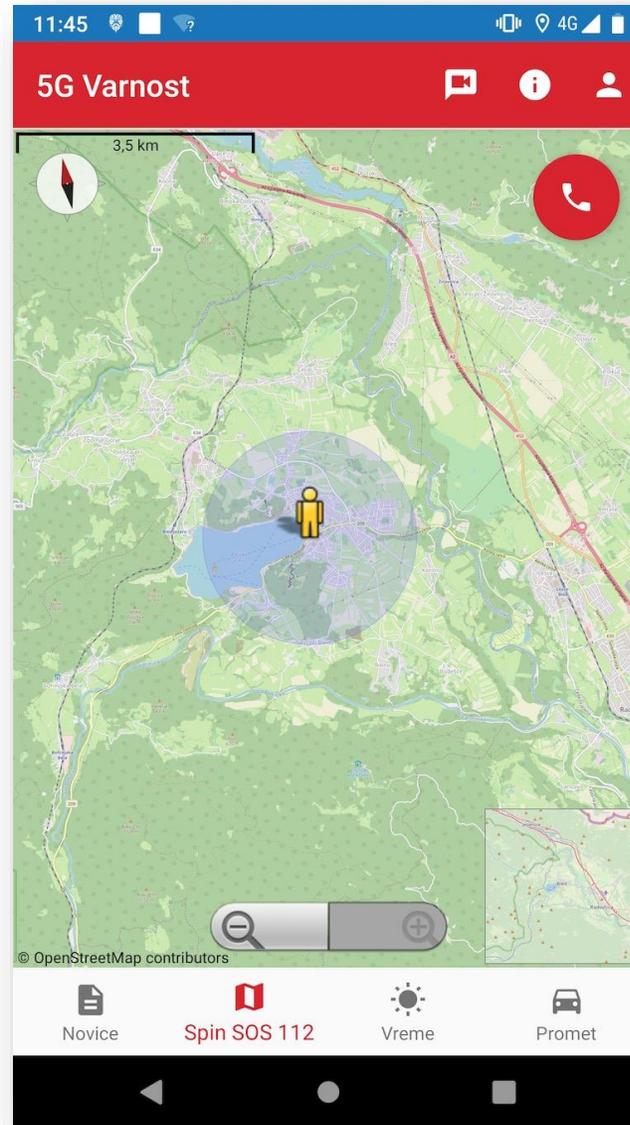
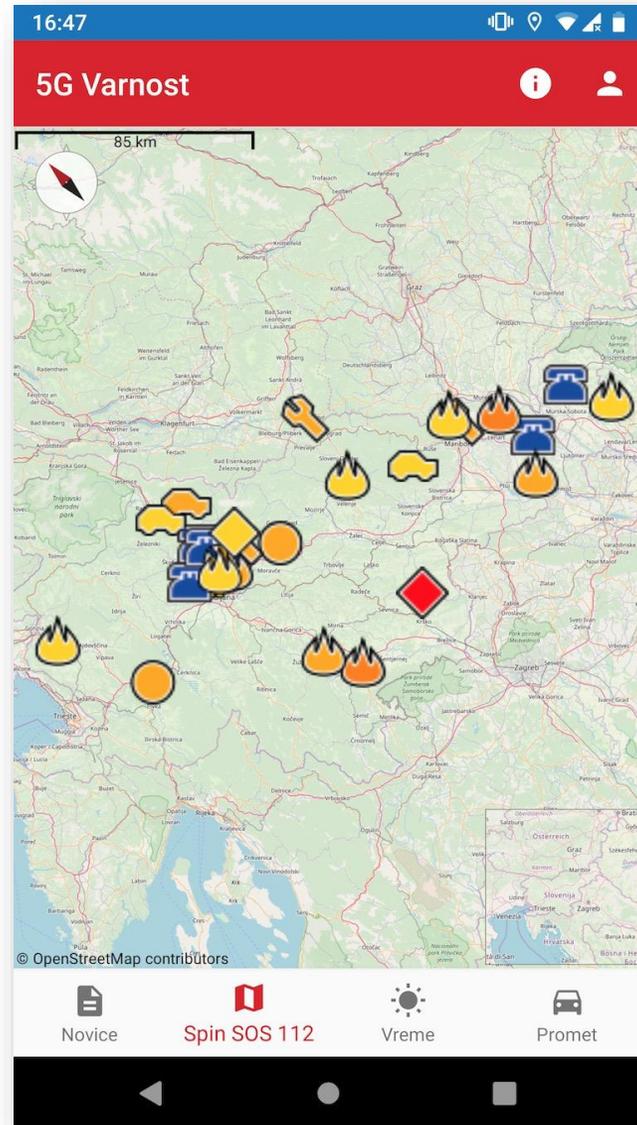
Increasing the app usage

- Making the app generally useful – has to offer more than just 112
 - Local news and events (existing 112 reports)
 - Traffic information
 - Traffic radar notifications
 - Weather information
 - Finding parking, pharmacies, ATMs,...
 - (Some mock-ups follow)
- Emergency features
 - Background call sniffing (send data when 112 is dialed)
 - PEMEA protocol support
 - WebRTC for video communication, when call established from the app

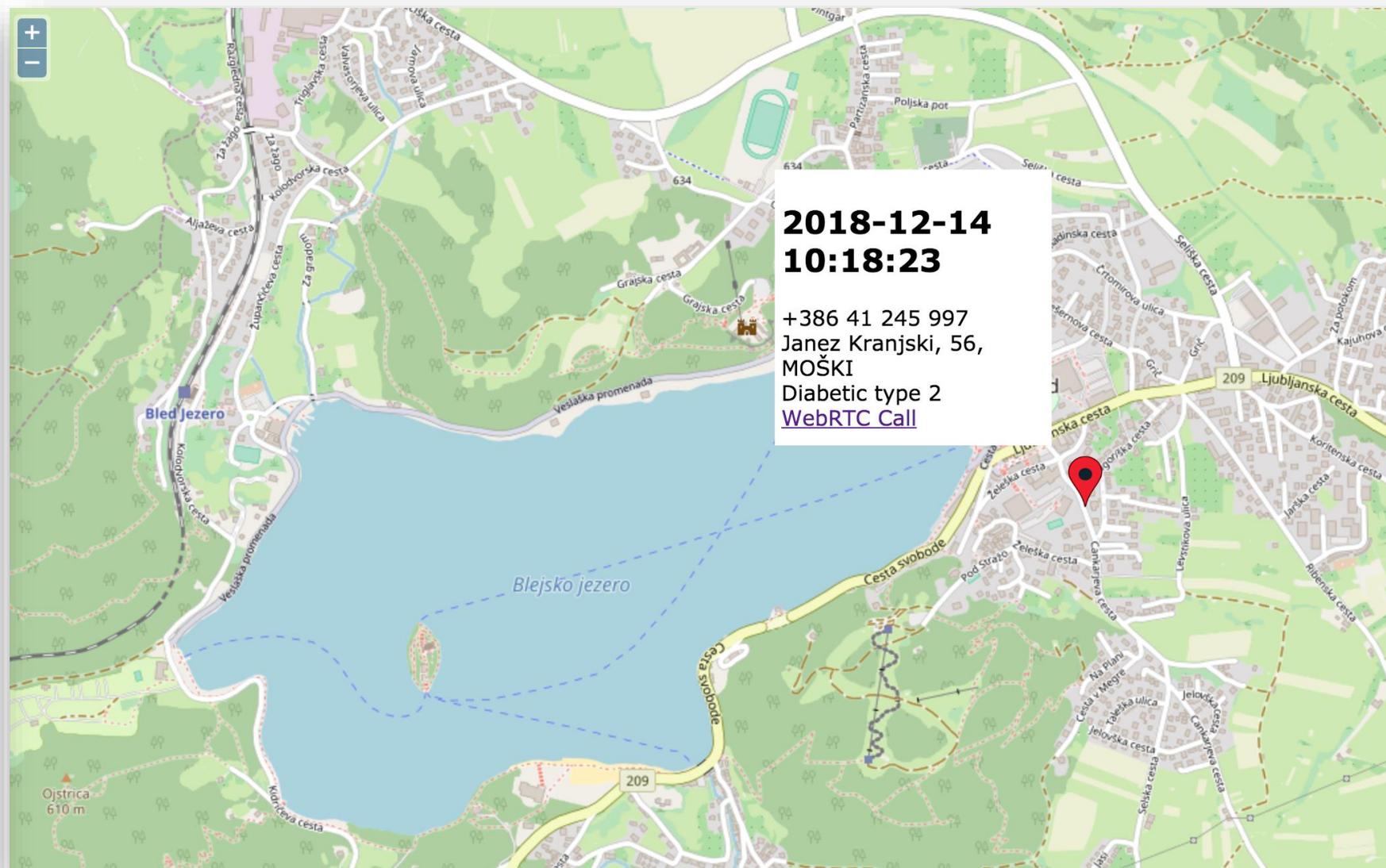
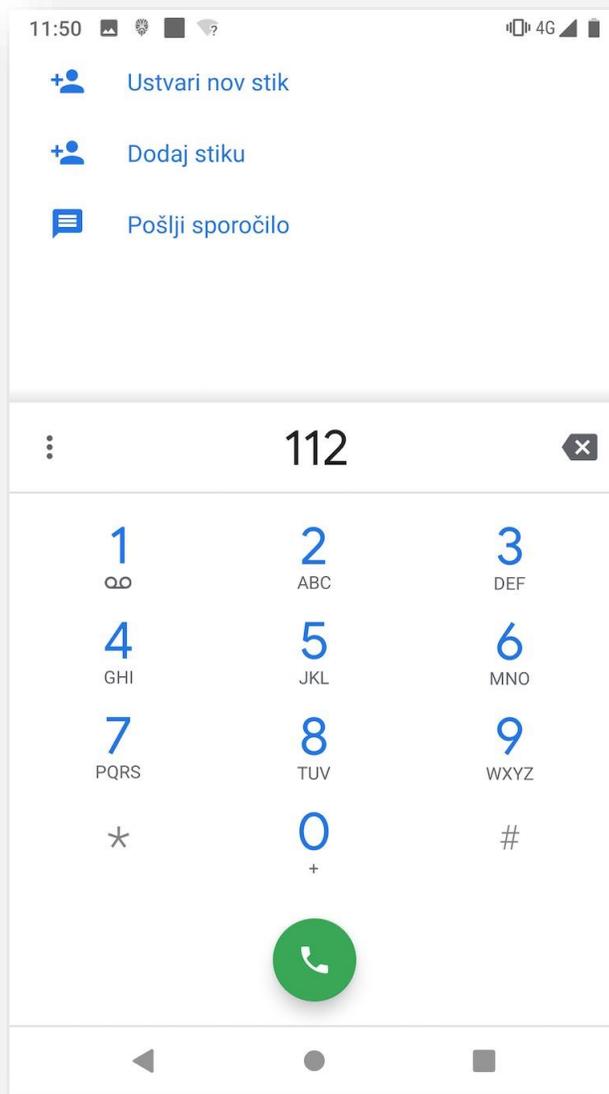




Demo



Demo



To summarize

- Apps are here to stay
 - but need to overcome the problem of recognition (in stressful situations!)
- We plan to combat this by making the app generally useful
 - not only for emergency calling
 - Smart city context (traffic, municipal transport, bike sharing)
 - Weather, events, etc.
 - Can use notifications to remind user the app is there
- Just in case, also reduce the need for user's involvement
 - Number sniffing
 - Send PEMEA EDS message whenever 112 is dialed
- Leverage 5G network features
 - To ensure QoS, provide free-of-charge calling, better location

5G Varnost [📶] Thank you!

<https://5gvarnost.iskratel.com/>



twitter.com/LTFE

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ISKRATEL



Univerza v Ljubljani
Fakulteta za elektrotehniko



osi.si

Naložbo financira Republika Slovenija
in Evropska unija iz Evropskega sklada
za regionalni razvoj.



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA IZOBRAŽEVANJE,
ZNANOST IN ŠPORT



EVROPSKA UNIJA
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